

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

Claim 1. (Cancelled)

Claim 2. (Cancelled)

Claim 3. (Currently amended) An electro-modulating device as claimed in Claim 2 10, wherein the modulating medium is an active layer situated between a first layer of conducting semiconductor and a second layer of conducting semiconductor, the first and second layers of conducting semiconductor forming the electrodes for applying a bias across the modulating medium.

Claim 4. (Currently amended) An electro-modulating device as claimed in Claim 2 10, wherein the electro-modulating device has a mounting surface on which there is mounted the modulating element.

Claim 5. (Previously presented) An electro-modulating device as claimed in Claim 4, wherein the mounting surface has securing means for securing the end portion of an optic fibre such that light from the fibre can be coupled into and out of the modulating medium through the input-output surface.

Claim 6. (Currently amended) An electro-modulating device as claimed in Claim 5, An electro-modulating device comprising a modulating element, the modulating element having a modulating medium for modulating light passing therethrough, an optical input-output surface by which light both enters the medium prior to modulation of the light and exits the medium after modulation of the light, a light reflector, and electrodes for applying an electric field across the modulating medium, wherein:

the input-output surface, the medium and the reflector are arranged so that light enters the medium through the input-output surface, travels through the medium towards the reflector, is reflected by the reflector to travel back through the medium towards the input-output surface, and exits the medium through the input-output surface;

the electric field is transverse to the direction of propagation of light traversing the medium between the input-output surface and the reflector; and

the refractive index of the medium is responsive to the applied electric field so that the intensity and/or phase of the light exiting the input-output surface is dependent on the applied electric field,

wherein the modulating element is formed from a section of semiconductor wafer and the modulating medium is formed from an active layer on or in the semiconductor wafer, the active layer having a plurality of edges and the input-output surface residing on an edge of the active layer, the electro-modulating device has a mounting surface on which there is mounted the modulating element, the mounting surface has securing means for securing the end portion of an optic fibre such that light from the fibre can be coupled into and out of the modulating medium through the input-output surface, and the mounting surface is formed from a silicon substrate having a V-groove etched thereon for receiving the end portion of an optic fibre.

Claim 7. (Previously presented) An electro-modulating device as claimed in claim 4, wherein the mounting surface has a light guide formed thereon for guiding light into and out of the modulating element.

Claim 8. (Previously presented) An electro-modulating device as claimed in Claim 7, wherein the light guide and modulating medium are formed from a continuous layer of semiconductor.

Claim 9. (Currently amended) An electro-modulating device as claimed in claim + 10, wherein the modulating element has at least one end wall and the reflector is formed by at least one layer of reflective material deposited on the end wall of the modulator element.

Claim 10. (Currently amended) An electro-modulating device as claimed in claim 2, An electro-modulating device comprising a modulating element, the modulating element having a modulating medium for modulating light passing therethrough, an optical input-output surface by which light both enters the medium prior to modulation of the light and exits the medium after modulation of the light, a light reflector, and electrodes for applying an electric field across the modulating medium, wherein:

the input-output surface, the medium and the reflector are arranged so that light enters the medium through the input-output surface, travels through the medium towards the reflector, is reflected by the reflector to travel back through the medium towards the input-output surface, and exits the medium through the input-output surface;

the electric field is transverse to the direction of propagation of light traversing the medium between the input-output surface and the reflector; and

the refractive index of the medium is responsive to the applied electric field so that the intensity and/or phase of the light exiting the input-output surface is dependent on the applied electric field,

wherein the modulating element is formed from a section of semiconductor wafer and the modulating medium is formed from an active layer on or in the semiconductor wafer, the active layer having a plurality of edges and the input-output surface residing on an edge of the active layer, and wherein the modulating medium is formed from a layer of InGaAsP, and each electrode is formed from a layer of conducting InP.

Claim 11. (New) An electro-modulating device as claimed in Claim 6, wherein the modulating medium is an active layer situated between a first layer of conducting semiconductor and a second layer of conducting semiconductor, the first and second layers of conducting semiconductor forming the electrodes for applying a bias across the modulating medium.

Claim 12. (New) An electro-modulating device as claimed in claim 6, wherein the mounting surface has a light guide formed thereon for guiding light into and out of the modulating element.

Claim 13. (New) An electro-modulating device as claimed in Claim 12, wherein the light guide and modulating medium are formed from a continuous layer of semiconductor.

Claim 14. (New) An electro-modulating device as claimed in claim 6, wherein the modulating element has at least one end wall and the reflector is formed by at least one layer of reflective material deposited on the end wall of the modulator element.

Claim 15. (New) An electro-modulating device comprising:

a silicon mounting surface having a V-groove etched thereon for receiving an end portion of an optic fibre;

a modulating element being mounted on said mounting surface, said modulating element having a modulating medium for modulating light passing therethrough;

an optical input-output surface by which light enters and exists said modulating medium in a first direction;

a light reflector; and

electrodes for applying an electric field in a second direction across said modulating medium, said second direction being transverse to said first direction, said modulating medium having a refractive index responsive to a magnitude of said electric field so that an intensity and/or phase of light exiting said optical input-output surface is dependent on said magnitude.

Claim 16. (New) An electro-modulating device as claimed in claim 15, wherein said mounting surface has a light guide formed thereon for guiding light into and out of said modulating element.

Claim 17. (New) An electro-modulating device as claimed in Claim 16, wherein said light guide and said modulating medium are formed from a continuous layer of semiconductor.

Claim 18. (New) An electro-modulating device as claimed in claim 15, wherein said modulating element has an end wall, said reflector being formed by at least one layer of reflective material deposited on said end wall.

Claim 19. (New) An electro-modulating device as claimed in claim 15, wherein said modulating medium is formed from a layer of InGaAsP, and said electrodes are formed from a layer of conducting InP.

Claim 20. (New) An electro-modulating device as claimed in claim 15, wherein said mounting surface has securing means for securing said end portion.